



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,441	11/03/2003	Se Kit Yuen	Q77986	1528

23373 7590 01/24/2006
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

CONLEY, SEAN EVERETT

ART UNIT PAPER NUMBER

1744

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/698,441

Applicant(s)

YUEN, SE KIT

Examiner

Sean E. Conley

Art Unit

1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-8 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "nearly" in claim 1 is a relative term which renders the claim indefinite. The term "nearly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Art Unit: 1744

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the front and back block walls". There is insufficient antecedent basis for this limitation in the claim.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the lower end" and "the upper end". There is insufficient antecedent basis for this limitation in the claim.

5. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5-8 recite the limitation "the direct current (DC) inputs". There is insufficient antecedent basis for this limitation in each of the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1744

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hak (U.S. Patent No. 6,494,940 B1) in view of Yuen et al. (GB 2301179 A) and Pick et al. (U.S. Patent No. 5,330,722).

Regarding claim 1, Hak discloses a portable air cleaner comprising a housing (12) having an air inlet (36) and an air outlet (37), an extractor fan (78) drawing air into inlet (36) through a ultraviolet radiation tube (86) and out of the housing through air outlet (37), a circuit (162; col. 8, lines 49-63) connected to and controlling the radiation tube, a switch (168) on housing (12) with a plug (178) and electric cord (176) to receive electricity therefrom, and a shield (102) keeping the ultraviolet radiation from radiating beyond the housing to protect a users eyes. The ultraviolet radiation tube (86) is fixed at the outlet (outlet grille (106)) of the air cleaner, the outlet which is placed on the body (housing (12)) (see figures 7 and 8; col. 6, lines 34 to col. 7, line 63).

However, Hak fails to specifically teach a portable air cleaner comprising a body that is semi-circular in shape or an air cleaner that includes a circuit board, a cathode

high voltage discharge fiber line fixed at the air outlet, and an extractor fan fixed between the ultraviolet lamp and the air outlet.

Yuen et al. discloses an optoelectronic air cleaner comprising a main body (cover (24) with base (22)) of pyramidal shape, the main body including a draft fan (36) for pulling air through the chamber, a transformer (44), a circuit board (42), an extreme ultraviolet ray tube (32) and a cathode high voltage discharge fiber thread (40) therein to further ionize contaminants in the air (see page 5, lines 25-27), characterized in that the main body is provided with an air inlet (via filter cover (30)) and an air outlet (via outlet grill (14)), the air outlet being disposed on the front end of the main body (see figure 2), an air exhaust gridiron (outlet grill (14)) being disposed in the front surface of a plate fixed on a front gridiron (fan cover (34)) on the front end (16) of the main body; the air inlet (via filter cover (30)) being disposed on the rear end of the main body and having an air input gridiron (filter cover (30)) provided with a dustproof gridiron (filter holder (26)), a dust screen (filter (28)) and a dust cover for the air inlet; a draft fan fixing cover (fan cover (34)), a draft fan (36) and a fixing frame (support frame (38)) being provided adjacent to the inner surface of the air exhaust gridiron (14); a carbon fiber thread (40) being fixed to the center of the front surface of the air exhaust gridiron (14); an air collecting device being (empty space between the filter holder and the fan support frame) disposed between the air inlet and the draft fan; and an extreme ultraviolet ray tube (32) being disposed at the center of the air collecting device (see figure 2; page 4, line 8 to page 5, line 27). This reference has been relied upon to teach that it is well known to place the extractor fan between the outlet and the ultraviolet radiation source

Art Unit: 1744

and also that it is well known to use a discharge fiber line fixed to the air outlet to further ionize the air stream.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the air purifier of Hak and include a cathode high voltage discharge fiber line fixed at the air outlet as taught by Yuen et al. in order to further ionize the incoming air passing through the air purifier (see page 5, lines 24-27 of Yuen et al.).

Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the purifier of Hak and replace the control system with a functionally equivalent viable alternative system disclosed by Yuen et al. which includes a circuit board containing the electrical components to control the operation of the purifier. Further, it would have been obvious to replace the control system of Hak with the circuit board of Yuen et al. based on its suitability and desired characteristics.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to shift the location of the fan from one side of the ultraviolet lamp (the inlet side) to the outlet side of the ultraviolet lamp. The fan will function exactly the same to pull air into the air purifier and then blow the air out of the purifier after it has been treated. In view of the legal precedent established by the prior case law In re Japikse 86 USPQ 70 (CCPA 1950) which states that shifting the location of parts would have been within the general skill of a worker in the art, it would have been well within the purview and obvious to shift the location of the fan as claimed.

Pick et al. discloses a germicidal air purification device for trapping and destroying airborne microorganisms using an ultraviolet radiation source and a filter medium. The device comprises a housing that is semi-circular in shape (see figures 1 and 6; abstract).

Therefore, it would have been an obvious matter of design choice to make the device semi-circular in shape as taught by Pick et al. since the court has held that a claimed shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed shape was significant (see In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)).

Regarding claim 2, Hak discloses that the air collector (ultraviolet light chamber (18)) is comprised of a space which is defined by an air collecting wall (walls located below and next to the ultraviolet lamp (86)) and a blocking wall (light shield (102)) wherein the ultraviolet lamp (86) is fixed between the air collecting wall and the blocking wall (see figures 7 and 8). The blocking wall (shield (102)) prevents the ultraviolet light rays from exiting out of the air purifier housing (see col. 7, lines 25-35).

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pick et al. in view of Yuen et al.

Pick et al. discloses a germicidal air purification device for trapping and destroying airborne microorganisms using an ultraviolet radiation source and a filter medium. The device comprises a housing that is semi-circular in shape (see figures 1

and 6; abstract). Inside the housing (22) is an extractor fan (42), a transformer (78), a power supply (82) (the enclosed power supply contains a circuit board), an electrode end ultraviolet radiation tube (34), characterized in that the housing (22) has an air inlet (24) and outlet (24) formed on the body of the housing (see figure 6). The ultraviolet radiation tube (34) is fixed at the outlet which is placed in the body, and is formed in an air collector (space surrounding the ultraviolet lamps collects air to be treated). The extractor fan (42) is fixed between the ultraviolet radiation tubes (34) and the air outlet (24) and are formed inside of the body of the housing (22) (see figures 1, 2 and 6; col. 5, line 62 to col. 2, line 36). Pick et al. fails to teach a portable air cleaner comprising a cathode high voltage discharge fiber line fixed at the air outlet.

Yuen et al. discloses an optoelectronic air cleaner comprising a main body (cover (24) with base (22)) of pyramidal shape, the main body including a draft fan (36) for pulling air through the chamber, a transformer (44), a circuit board (42), an extreme ultraviolet ray tube (32) and a cathode high voltage discharge fiber thread (40) therein to further ionize contaminants in the air (see page 5, lines 25-27), characterized in that the main body is provided with an air inlet (via filter cover (30)) and an air outlet (via outlet grill (14)), the air outlet being disposed on the front end of the main body (see figure 2), an air exhaust gridiron (outlet grill (14)) being disposed in the front surface of a plate fixed on a front gridiron (fan cover (34)) on the front end (16) of the main body; the air inlet (via filter cover (30)) being disposed on the rear end of the main body and having an air input gridiron (filter cover (30)) provided with a dustproof gridiron (filter holder (26)), a dust screen (filter (28)) and a dust cover for the air inlet; a draft fan fixing cover

(fan cover (34)), a draft fan (36) and a fixing frame (support frame (38)) being provided adjacent to the inner surface of the air exhaust gridiron (14); a carbon fiber thread (40) being fixed to the center of the front surface of the air exhaust gridiron (14); an air collecting device being (empty space between the filter holder and the fan support frame) disposed between the air inlet and the draft fan; and an extreme ultraviolet ray tube (32) being disposed at the center of the air collecting device (see figure 2; page 4, line 8 to page 5, line 27). This reference has been relied upon to teach that it is well known to use a discharge fiber line fixed to the air outlet to further ionize the air stream and further use a circuit board to hold the components for supplying power to the fan, ultraviolet radiation source, and fiber discharge line.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the air purifier of Pick et al. and include a cathode high voltage discharge fiber line fixed at the air outlet as taught by Yuen et al. in order to further ionize the incoming air passing through the air purifier (see page 5, lines 24-27 of Yuen et al.).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hak in view of Yuen et al. and Pick et al. as applied to claim 1 above, and further in view of Cartellone (U.S. Patent No. 5,837,020) and Bullard (U.S. Patent No. 2,085,249).

Hak in view of Yuen et al. and Pick et al. fail to specifically teach a portable device that includes a movable handle and a movable gallus fixed to the body of the device by a buckle.

Cartellone discloses a portable room air cleaner (10) that includes a handle (154) that is mounted to a top section (106) of the device so that the user can conveniently move the air cleaner (10) to various locations within a room or building. Handle (154) is mounted to top section (106) by a handle mount (156) which allows handle (154) to pivot on top section (106) such that the handle may be pivoted downwardly into the slot to maintain the handle in a secure position (see figure 1; col. 12, lines 9-16). This reference has been relied upon to teach that it is well known to use a movable handle on a portable air treatment device.

Bullard discloses a portable air respirator apparatus for supplying conditioned air to a user comprising a breathing chamber (3) that is supported on the body of the wearer by a harness preferably comprising a waste encircling strap (6) and a pair of shoulder straps (7). The shoulder straps (7) are detachably connected to the breathing chamber (3) of the air purification apparatus by suitable buckles (8) (see figure; col1, line 54 to col. 2, line 12). This reference has been relied upon to teach that it is well to use a strap connected by a buckle on a portable air treatment device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the invention of Hak in view of Yuen et al. and Pick et al. and include a movable handle and a movable strap connected to the device by a buckle taught by Cartellone and Bullard in order to support the device on the body of the user (see col. 1, line 55 of Bullard) and also provide a handle for moving the device from various locations in a room or building (see col. 12, lines 9-11 of Cartellone).

9. Claims 3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hak in view of Yuen et al., Pick et al., Cartellone, and Bullard as applied to claims 1, 2 and 4 above, and further in view of Sham et al. (U.S. Patent No. 6,464,760 B1).

Hak in view of Yuen et al., Pick et al., Cartellone, and Bullard all fail to teach the use of batteries to power the air purification device.

Regarding claim 3, the modified invention of Hak includes the circuit board of Yuen et al. located on a supporting frame in the housing. The circuit board comprises a transformer (44), power source lines, power supply generator (see figures 4-7), and an electronic switcher. However, Hak in view of Yuen et al. and Pick et al. fails to teach batteries used to power the device instead of a conventional AC power source such as power from a power cord (46).

Sham et al. discloses an apparatus for purifying air to by exposing an air stream from a surrounding area to ultraviolet radiation. Sham et al. further discloses in the preferred embodiment of the invention, a free standing, self-contained unit powered from a conventional AC source, although the unit could be operated from storage batteries (DC source) rather than an AC source; having a housing with a removable front cover, an inlet opening and an outlet opening, filter media to filter an air stream which flows from the inlet opening to the outlet opening; an ultraviolet light source to provide germicidal radiation to the air stream and to a surface of a filter medium, and a motorized fan for maintaining a flow of air through the housing from the inlet opening to the outlet opening. The unit is compact and attractive, and has a high efficiency of air

purification and sanitization using a relatively short airflow (see col. 1, lines 34-51). This reference has been relied upon to teach that it is well known to substitute a conventional AC source of power with a DC power source such as storage batteries in order to increase the portability of the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the invention of Hak in view of Yuen et al. and Pick et al. and replace the conventional AC power source (power cord (46)) with a storage battery (DC power source) as taught by Sham et al. in order to increase the portability of the device.

Regarding claims 5-8, Sham et al. discloses an apparatus for purifying air to by exposing an air stream from a surrounding area to ultraviolet radiation. Sham et al. further discloses in the preferred embodiment of the invention, a free standing, self-contained unit powered from a conventional AC source (although the unit could be operated from storage batteries (DC source) rather than an AC source); having a housing with a removable front cover, an inlet opening and an outlet opening, filter media to filter an air stream which flows from the inlet opening to the outlet opening; an ultraviolet light source to provide germicidal radiation to the air stream and to a surface of a filter medium, and a motorized fan for maintaining a flow of air through the housing from the inlet opening to the outlet opening. The unit is compact and attractive, and has a high efficiency of air purification and sanitization using a relatively short airflow (see col. 1, lines 34-51). This reference has been relied upon to teach that it is well known to

substitute a conventional AC source of power with a DC power source such as storage batteries in order to increase the portability of the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the invention of Hak in view of Yuen et al. and Pick et al., or Hak in view of Yuen et al., Pick et al, Cartellone, and Bullard and replace the conventional AC power source (power cord (46)) with a storage battery (DC power source) as taught by Sham et al. in order to make the device portable. Furthermore, it would have been obvious that the storage batteries would be attached to a DC input of the device since it is known that the batteries are a DC power source while the components of the air purification run on AC power and therefore, the batteries would have to be attached to a DC input of a voltage converter on the circuit board located within the housing of the device in order to convert the voltage for use by the fan, ultraviolet radiation source, and fiber discharge line.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rick Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SEC *A.E.C.*

January 19, 2006

Krisanne Jastrzab
KRISANNE JASTRZAB
PRIMARY EXAMINER